

MetcoClad Laser Cladding Systems

Choosing Oerlikon Metco as your partner gives you much more than a laser cladding system supplier. We have over 20 years of laser cladding production experience for customers that range from general industry to gas turbine components. Combine that with our renowned experience in the design of fully integrated, robotic thermal spray systems and you have a partner with unrivaled credentials.

The Oerlikon Metco advantage

Whether your company already has a laser cladding system or this is your first venture into laser cladding as an industrial coating process, it is important to rely on a strong partner. Oerlikon is active in laser cladding for decades and runs a successful laser cladding service business in Switzerland and USA.

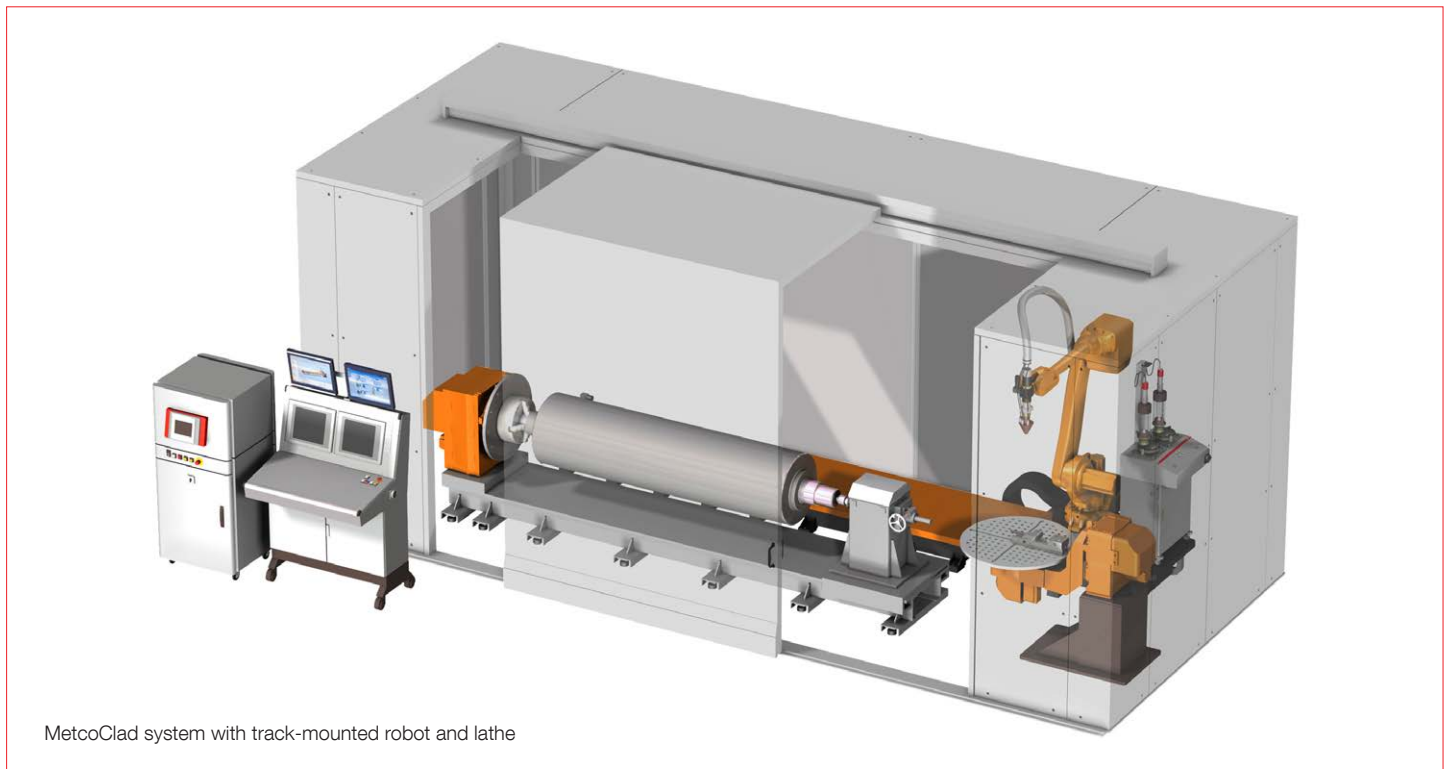
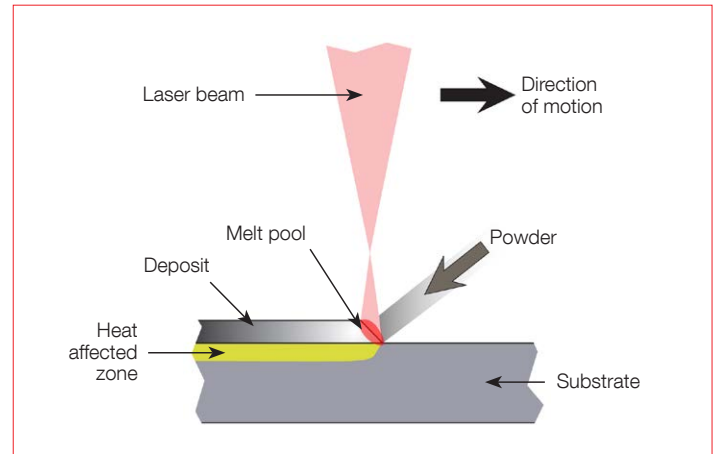
Our MetcoClad™ systems employ our long-standing engineering experience in thermal spray systems and our laser cladding application expertise. The value-added features we incorporate into our MetcoClad systems are driven by customer requirements and our own job-shop-experience.



The Laser Cladding process

In laser cladding, the laser beam is defocused on the workpiece with a selected spot size. The powder coating material is carried by an inert gas through a powder nozzle into the melt pool. The laser optics and powder nozzle are moved across the workpiece surface to deposit single tracks, complete layers or even high-volume build-ups.

Typical laser power	1 to 6 kW
Typical build-up rate	0.1 to 12 kg/h (0.22 to 22.5 lb/h)
Typical coating thickness	0.2 to 4 mm or more
Coating materials	Weldable powders (metals, alloys, carbide blends)



MetcoClad system with track-mounted robot and lathe

We support your MetcoClad system with

- A diode laser as the state-of-the-art energy source for the laser cladding process
- Oerlikon Metco powder feeder technology with a 25-year track record in laser cladding
- Oerlikon Metco laser cladding powder nozzles
- Oerlikon Metco laser cladding controller for process monitoring
- Highly-accurate robotic handling for process head and workpiece movement
- Certified safety cabin and exhaust

We support your MetcoClad installation with

- Training in laser cladding basics
- Laser cladding application development and support
- Pilot lot and production ramp-up processing of your parts using our MetcoClad system in Wohlen, Switzerland
- MetcoClad laser cladding powders for wear resistance, corrosion resistance, surface buildup and surface restoration

MetcoClad system configuration

The robot and the workpiece manipulators provide absolute positioning accuracy and are integrated seamlessly into a single programmable handling system for simultaneous movement of all axes in operation.

The handling system is tailored to your processing needs and according to the size and weight of your components.

For example, the MetcoClad system can be configured with:

- Fix mount robot
- Fix mount robot and tilting turntable
- Track-mounted robot and lathe

The safety cabin that protects personnel and the environment against laser radiation can be omitted if alternative facilities are available at your site that meet laser safety requirements.



MetcoClad system operation

The operator desk with the Oerlikon Metco laser cladding controller is the sole interface between user and machine. Using the well-arranged desktop, the operator can monitor all process parameters, aided by a state-of-the-art alarm and messaging management system.

Additional features that include process and workspace surveillance cameras and dedicated robot simulation and programming tools support your laser cladding parameter development and processing—even on complicated 3D-geometries.

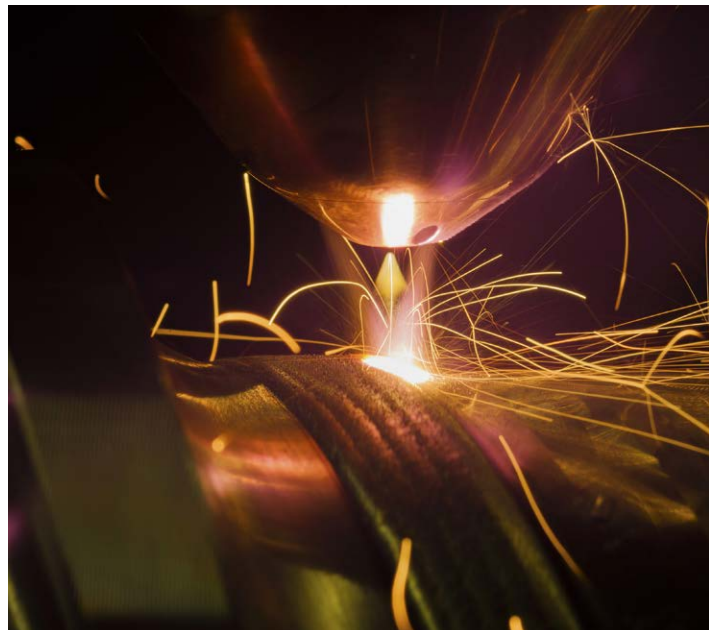


MetcoClad system integration

Your MetcoClad system benefits from our extensive coating equipment design experience and our laser cladding applications knowledge.

The soundly integrated system offers

- Simple operation and low error rate
- Reduced setup effort in production
- Flexibility for processing a wide range of workpiece geometries and cladding strategies, including the capability to clad multi-dimensional surfaces
- Remote maintenance and customer support by Oerlikon Metco's application engineers, thereby saving you time and cost



Laser Cladding Applications benefit from

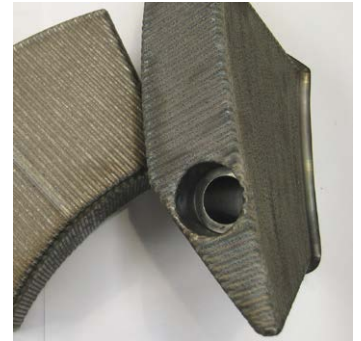
- Perfectly metallurgically-bonded and fully dense coatings
- Minimal heat affected zone and low dilution of the substrate and filler material. Low dilution means that functional coatings will perform at reduced thickness, so fewer layers are applied
- Fine, homogeneous microstructure resulting from the rapid solidification rate that promotes wear resistance of carbide coatings
- Edge geometries can be coated and built up with welded deposits
- Near net-shape weld build-up requires little finishing effort
- Extended weldability of sensitive materials like carbon-rich steels or nickel-based superalloys that are difficult or even impossible to weld using conventional welding processes
- Excellent process stability and reproducibility because it is numerical controlled welding process

Related offerings

- Our MetcoClad Laser Cladding powders are specifically designed to meet Laser Cladding process requirements with improved weldability that result in superior coating properties.
- Our MetcoClad Laser Cladding services, currently available in Switzerland and USA. Switzerland operates a fully-fledged MetcoClad system with a 10-axis handling system and 6 kW diode laser.



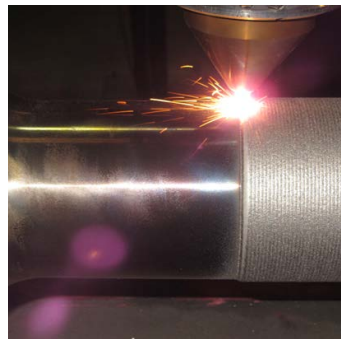
Turbine blade tip repair with MetcoClad 625



Kneader teeth with PlasmaDur 51302 wear-resistant tungsten-carbide coating



Repair of shafts with iron-based alloys



Laser cladding with MetcoClad 52052 for the Oil and Gas industry



3D turbocharger blade tip repair with MetcoClad 625